Communicable Disease BULLETIN

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New Hampshire Recommendations for the Prevention and Control of Influenza and Its Complications

by Claire Carraher, RN, BSN, CIC
Public Health Nurse Coordinator
Communicable Disease Control

Each year about 20,000 deaths are attributed to influenza (flu) epidemics in the United States (US).[1] In New Hampshire, "flu" season usually begins in late December or January. Several reports of influenza outbreaks in nursing homes are reported each year to the New Hampshire Bureau of Communicable Disease Control (NH BCDC). Measures for the prevention and control of influenza include vaccination, laboratory identification of circulating influenza virus and antiviral medications.

Yearly influenza vaccination of high-risk individuals is the primary means of preventing influenza illness. This includes:

- persons aged 50 years and older
- residents of nursing homes and other residential chronic care facilities
- adults and children 6 months and older who have chronic medical conditions
- women who will be in their second or third trimester of pregnancy during flu season
- children and teenagers who are receiving long-term aspirin therapy and therefore may be at risk for developing Reye syndrome and
- health-care workers, household members and others who care for persons at high risk for complications

There will be an adequate supply of influenza vaccine this season although delivery of vaccine to providers may be delayed.

Illness will be prevented in 70%-90% of healthy adults aged <65 years when the antigenic match between vaccine and circulating viruses is close. The vaccine is 30%-70% effective in preventing hospitalization for pneumonia and influenza in the elderly living outside of nursing homes or similar chronic-care facilities. For the elderly in nursing homes, the vaccine effectiveness is 30%-40% effective in preventing illness, 50%-60% effective in preventing hospitalization for pneumonia and 80% effective in preventing death.[1] Because lower rates of protection are provided by the vaccine in the frail elderly, a high rate of vaccination in health-care workers and facility staff will lessen resident's exposure to influenza illness.

Anti-viral drugs serve as an adjunct to influenza vaccine for the prevention and control of influenza. They should not, however, be used as a substitute for vaccine. Four drugs are presently licensed for use in the US. Amantadine was approved in 1976 for treatment and prophylaxis of influenza type A in adults and children aged 1 year and older. In 1993 rimantadine was approved for the treatment of adults and adolescents aged 14 years and older and the prophylaxis of adults and children aged 1 year and older.

Either drug may be used for treatment of influenza A and, if administered within 2 days of illness onset to otherwise healthy adults, the duration of uncomplicated influenza A can be reduced. The medication should be discontinued as soon as clinically indicated, usually 3-5 days of treatment or within 24-48 hours after the disappearance of signs and symptoms. Factors related to cost, compliance, and potential side effects should be considered.[1] Rimantadine is more costly but causes fewer side effects.[4]

Either rimantadine or amantadine is 70%-90% effective in preventing influenza A infection. These antivirals will allow subclinical infection and the development of protective antibody while preventing illness. Neither medication will interfere with antibody response from influenza vaccine.

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The following vaccination priorities have been recommended by the Advisory Committee on Immunization Practices:

1. Vaccinate persons at high risk of complications related to influenza and health care workers.
2. Schedule vaccination campaigns later in the season.
3. In December and later, vaccinate persons 50-64 years old who are not at high risk and are not household contacts of high risk persons.
4. Continue to immunize the above groups and other people who wish to decrease their risk of influenza. Immunization efforts should continue into December and later, as long as vaccine is available.
5. Assuring pneumococcal vaccination of high risk persons early in the season, according to ACIP recommendations, will protect against secondary pneumococcal disease associated with influenza, but is not a substitute for influenza vaccine.[2]

Summary of the 1999-2000 Influenza Season in New Hampshire

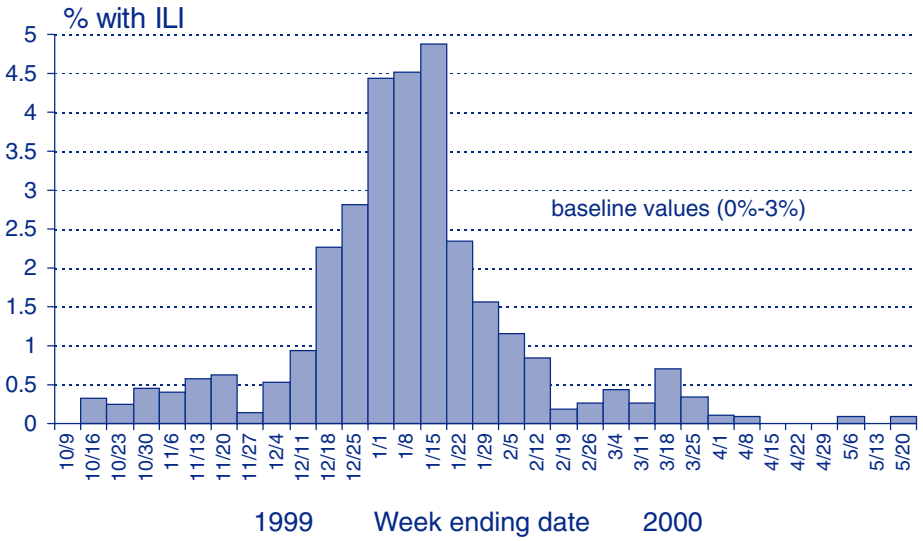
by Susan D. Bascom, RN BSN
VPD Surveillance Coordinator
Communicable Disease Surveillance

Influenza, also known as the flu, is an acute respiratory disease caused by the influenza virus. The flu is characterized by an abrupt onset of fever, headache, nonproductive cough, general malaise, and muscle aches. Subsequently, the respiratory symptoms (e.g. sore throat, nasal congestion and cough) become more prominent. During a bout of influenza, any underlying chronic health conditions a person has may be exacerbated and/or a secondary bacterial pneumonia may develop.

There are three influenza virus strains, A, B and C. Both influenza type A and type B viruses are responsible for widespread illness in humans, while type C is rarely reported in humans. Influenza A viruses are subclassified into subtypes based on the surface antigens, or proteins, known as hemagglutinin (H) and neuramidase (N). Influenza B viruses are not divided into subtypes.[1] Two influenza A subtypes – A(H1N1) and A(H3N2) – and the influenza B viruses have been in global circulation since 1977.[2]

Both influenza A and B viruses undergo gradual, continuous changes in the proteins in a process called antigenic drift. Because of this constant change, antibodies which developed from previous exposure to the influenza virus may not be protective against the current circulating virus. As a result, the following occurs: yearly influenza epidemics are a common occurrence; a person may have multiple influenza infections in his or her lifetime; and influenza vaccine must be annually reviewed and updated to ensure that it contains the correct components. The strains contained in the 1999-2000 trivalent influenza vaccine included A/Beijing/262/95-like (H1N1), A/Sydney/5/97-like (H3N2), and B/Beijing/184/93-like hemagglutinin antigens.

Figure 1. *Weekly percentage of visits to New Hampshire sentinel physicians for influenza-like illness (ILI), 10/3/99-5/20/00.*



In New Hampshire, influenza is not a reportable disease by law. We do, however, monitor influenza and influenza outbreaks, and provide recommendations to health care providers. Surveillance occurs in our state a number of ways including weekly assessments of influenza activity, informal reports from health care providers, schools and residential facilities, reports from the Public Health Laboratories of laboratory results on specimens submitted, and through the U.S. Influenza Sentinel Surveillance Network.

The U.S. Influenza Sentinel Surveillance Network is managed by the Centers for Disease Control and Prevention (CDC), but coordinated by each state. Each week during the influenza season, which runs from October to mid-May, the sentinel health care providers from around the state report directly to CDC. They report the total number of patients seen in their practice for that week, and the number of cases of influenza-like illness (ILI) by age group. For this purpose, ILI is defined as: 1) a fever $\geq$100° F and 2) cough or sore throat. For the 1999-2000 influenza season, we were fortunate to have 17 sentinel sites participating in New Hampshire. All counties were represented with at least one sentinel site, giving us a good picture of influenza activity in the state.

In the United States, the percentage of visits to sentinel physicians for ILI was first above baseline (0-3%) for the week ending December 25, 1999. Influenza activity remained above baseline through January 15, 2000, peaking at 6% for the week ending January 1, 2000.

In New Hampshire, the percentage of visits to sentinel physicians for ILI rose above the baseline level for the week end-

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Editor Jesse Greenblatt, MD, MPH – State Epidemiologist
Publisher State of New Hampshire Department of Health & Human Services
Office of Community and Public Health
6 Hazen Drive
Concord, NH 03301
Telephone Business Hours ..... (603) 271-4477
Toll Free ..... (800) 852-3345, ext. 4477
After Hours/Weekends .... (603) 271-5300
Fax (603) 271-0545
Website www.dhhs.state.nh.us/nhcdcs.htm

ing January 1, 2000, a week later than was reported nationally. The number of reported visits remained elevated through January 15, 2000, consistent with visits reported nationally. Peak influenza activity in New Hampshire was just under 5% for the week ending January 15, 2000 (Figure 1). This was two weeks later, and slightly less than, the peak influenza activity reported by sentinel physician visits nationally.

During the 1999-2000 influenza season, 266 influenza culture specimens were submitted to the New Hampshire Public Health Laboratories (PHL). These specimens were sent in by both sentinel physician sites and non-sentinel health care providers. During the October through mid-May influenza season, the PHL confirmed the first case of influenza, A(H3N2), on December 1, 1999. This specimen was submitted by a non-sentinel physician. On December 11, 1999, the PHL confirmed the first case of influenza from a sentinel site. In September 1999, which was prior to the beginning of the normal flu season, we experienced an unusual outbreak of influenza occurring on a cruise ship docked on the New Hampshire shoreline. Of the fifteen cultures taken, ten were confirmed to be influenza A(H3N2), while the rest were negative.

Of the 266 cultures submitted during 1999-2000 season, 74 were sent in by sentinel physician sites. Twenty-two (30%) of these cultures were positive. Nineteen, or 86.4% of the positive cultures, were identified as influenza A(H3N2). The remaining three positive cultures from sentinel physicians were identified as influenza A(not subtyped), influenza B(Beijing-like) and parainfluenza type 2. One hundred ninety-two cultures, including the 15 taken on the cruise ship, were submitted by non-sentinel physicians. Forty-seven (24.5%) of these cultures were positive. Forty, or 85% of the positive cultures, were identified as influenza A(H3N2). The remaining seven positive cultures from non-sentinel physicians were identified as one each of the following: influenza A(H3N1), influenza A(not sub-typed), parainfluenza type 1, parainfluenza type 2, adenovirus, cytomegalovirus (CMV), and respiratory syncytial virus (RSV).

For more information about the sentinel physician program, or for information about influenza, contact the Bureau of Communicable Disease Surveillance at our in-state toll-free number 1-800-852-3345 extension 0279, or at (603) 271-0279.

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New Tuberculosis Guidelines; Tuberculin Skin Testing of School Teachers in New Hampshire Eliminated

The Centers for Disease Control (CDC) and American Thoracic Society (ATS) published two important statements about tuberculosis (TB) in the April issue of the American Journal of Respiratory and Critical Care Medicine. The first statement, Diagnostic Standards and Classification of Tuberculosis in Adults and Children[1] provides an overview of TB infection and disease.

The second statement, Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection (LTBI), was also published in the June 9 MMWR[2]. Highlights of the statement include:

- Tuberculin skin testing should be targeted to high-risk groups rather than low-risk groups such as school teachers or pregnant women. Based on this statement and the recommendations of the New Hampshire (NH) TB Advisory Committee, the **NH TB Program no longer recommends routine tuberculin skin testing for school teachers in NH**.
- The preferred treatment for LTBI has been increased from six to **nine** months of daily isoniazid, regardless of age or HIV status.
- New alternative regimens for treatment of LBTI including a regimen of 2 months of rifampin and pyrazinamide.
- Routine baseline and follow-up laboratory monitoring of patients on treatment has been eliminated except for pregnant and postpartum women, persons who are HIV infected or persons at risk for liver disease. The importance of monthly clinical monitoring in place of laboratory monitoring is emphasized.

This statement, with continuing education credit, can be accessed at http://www.cdc.gov/mmwr/ under publications/recommendations and reports. The MMWR may also be ordered from CDC at 1-888-232-3228, press options 2,5,1,2.

CDC's new 4th edition of *The Core Curriculum on Tuberculosis: What the Clinician Should Know* is an easy to use handbook for evaluating and managing TB. The Core Curriculum, with continuing education credit can be accessed at the on line ordering system at www.cdc.gov/nchstp/tb/pubs/corecurr or ordered at 1-888-232-3228, select 2,5,1,2,2,2, and request the Core Curriculum, order #99-5763.

Information on TB is available through the New Hampshire TB Program at 271-4469 or 1-800-852-3345, x 4469.

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1. *Am J Respir Crit Care Med.* 2000; 161: 1376-1395.
2. CDC. Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection. *MMWR* 2000; 49 (RR-6).

New Hampshire Department of Health and Human Services
Office of Community and Public Health
Division of Epidemiology and Vital Statistics
6 Hazen Drive
Concord, NH 03301

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Both drugs have been studied in nursing homes and are recommended as part of influenza outbreak control programs.[1]

Two additional anti-viral drugs were approved in 1999 for the treatment of uncomplicated influenza types A and B. When administered within two days of symptom onset, either drug can reduce the duration of illness by approximately one day. Neither drug has been approved for prophylactic use. Oseltamivir is approved for treatment in adults aged 18 and older. Zanamivir was approved for treatment in persons aged 12 years and older. Revised precautions for the safety labeling of Zanamivir for inhalation have been published. It is generally not recommended for treatment of patients with underlying airway disease such as asthma or chronic obstructive pulmonary disease.[5]

In order to appropriately treat or prophylax patients with antiviral medications, accurate and timely diagnosis are necessary. Influenza surveillance as well as diagnostic testing can guide treatment decisions. Rapid tests are available in most laboratories. Some rapid tests identify type A only and others identify type A or B but do not distinguish between the two types. It is still important that specimens for viral culture are collected. Viral cultures provide specific information of subtypes and strains. This information is used to guide treatment and prophylaxis, compare the circulating strains with those in the vaccine, to formulate the vaccine for the coming year and to monitor antiviral resistance.[1]

In summary, influenza vaccine should be administered to those who are high-risk for complications of influenza. When cases of influenza-like illness start to be seen in a facility or community, rapid tests and viral cultures need to be done in order to establish the type of flu that is circulating in the community. After that, antiviral prophylaxis needs to be considered, on an individual basis, for persons at high-risk for complications. In a nursing home or other chronic care facility, antiviral therapy or prophylaxis should be used for the resident population to prevent or lessen the severity of disease. In the case of an influenza outbreak, antiviral prophylaxis should be offered to unvaccinated staff, especially if they provide direct care to residents.

For information about the presence of circulating influenza viruses in the community and test recommendations, please contact the staff of the NH BCDC at 603-271-4496 or 800-852-3345, ext. 4496 during business hours. After hours or on weekends, please call the state switchboard at 603-271-5300 and ask the have the public health nurse paged.

For vaccine information, contact the NH Immunization Program at 603-271-4482 or 800-353-3756, ext. 4482.

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